

WHAT IS CLAIMED IS:

1. A throttle valve control apparatus of an internal combustion engine comprising:

    a throttle valve axis rotated by a motor-driven actuator;

    an alternate magnet mounted to the throttle valve axis;

    a cover to which an element for detecting a change of magnetic flux of said alternate magnet is mounted;

    said cover being mounted to a throttle body to which said motor-driven actuator is mounted; and

    an output of said element constituting a function of an opening degree of said throttle valve.

2. A throttle valve control apparatus of an internal combustion engine comprising:

    a throttle body provided with a throttle valve controlling an amount of intake air;

    a throttle sensor detecting a rotational angle of an axis to which said throttle valve is mounted; and

    a motor-driven actuator in which a command value is adjusted in accordance with an electric signal output from said throttle sensor,

    wherein said throttle sensor comprises:

    an element mounted to one end of said throttle valve axis; and

    another element attached to a cover member

fixed to said throttle body so as to cover the axial end portion, and

wherein a magnetic physical amount between said pair of elements is varied in accordance with a change of the rotational angle of said throttle axis, and the element mounted to said cover member outputs an electric signal relating to the rotational angle of said axis in response to the change of said magnetic physical amount.

3. A motor vehicle comprising:

an element outputting an electric signal relating to an opening degree of a throttle valve on the basis of a magnetic signal of a magnet mounted to an axial end of said throttle valve,

wherein a control parameter of an engine is adjusted in accordance with a change of the electric signal output from said element.

4. A throttle control apparatus of an internal combustion engine structured such as to transmit a rotation of a motor to a throttle valve axis via a gear fixed to the throttle valve axis,

wherein a rotational angle of said throttle valve axis is detected by a magnetic type throttle sensor comprising a magnet and a hole element, and said gear is formed by a resin material.

5. A throttle valve control apparatus of an internal combustion engine structured such that a rotary axis of a motor and a throttle valve axis are

arranged in parallel and a rotation of the rotary axis of said motor is transmitted to said throttle valve axis via a reduction gear,

wherein a magnetic type throttle sensor comprising a magnet and a hole element is mounted so as to be capable of detecting a rotational angle of said throttle valve axis, and

wherein a rotary axis of a gear positioned in a middle of a torque transmission path between the rotary axis of said motor and said throttle valve axis is formed by a magnetic material.

6. A throttle valve control apparatus of an internal combustion engine structured such as to detect a rotational angle of a throttle valve driven by a motor,

wherein a magnet is mounted to said throttle valve axis;

wherein hole elements are arranged at positions facing to each other with respect to the magnet and a stator corresponding to a magnetic path is attached between said hole elements, and

wherein said motor is mounted to a position a uniform distance apart from said both hole elements.

7. A throttle valve control apparatus of an internal combustion engine structured such that a sensor for detecting a rotational angle of a throttle valve driven by a motor is provided and a rotary axis of said motor and said throttle valve axis are arranged

in parallel,

wherein a magnet is mounted to said throttle valve axis,

wherein hole elements are arranged at positions facing to each other with respect to the magnet and a stator corresponding to a magnetic path is attached between said hole elements, and

wherein said both hole elements are arranged out of a circular arc having a radius corresponding to a distance between the rotary axis of said motor and a center of said throttle valve axis.

8. A throttle valve control apparatus of an internal combustion engine comprising:

a magnet mounted to a throttle valve axis to which a throttle valve is mounted; and

a cover fixed to a throttle body so as to cover said magnet portion,

wherein a hole element sensitive to a change of a magnetic physical amount of said magnet and a signal processing circuit converting an output of said hole element into a predetermined electric signal are mounted to said cover.

9. A throttle valve control apparatus of an internal combustion engine structured such that a rotary axis of a motor and a throttle valve axis are arranged in parallel and a rotation of the rotary axis of said motor is transmitted to said throttle valve axis via a reduction gear,

wherein a cover is mounted to a throttle body so as to cover said reduction gear, and

wherein a magnetic type throttle sensor comprising a magnet and a hole element is mounted between an end surface of a gear fixed to said throttle valve axis and said cover so as to be capable of detecting a rotational angle of said throttle valve axis.

10. A throttle valve control apparatus of an internal combustion engine comprising:

a magnet mounted to an end portion of a throttle valve axis rotated by a motor;

an element detecting a rotational angle of said throttle valve axis in cooperation with the magnet; and

a spring holding said magnet at a predetermined opening position of opening degree when energizing of said motor is shut out, said spring being attached to a periphery of said throttle valve axis.

11. A throttle valve control apparatus comprising:

a magnet mounted to a throttle valve axis rotated by a motor;

an element detecting a rotational angle of said throttle valve axis in cooperation with the magnet; and

said element being constituted by two components arranged under a magnetic influence of said

magnet so as to be backed up by each other.